CLAIMS:

1. A method comprising:

multiplexing a first communication signal with a second communication signal according to a first multiplexing technique; and

multiplexing the first communication signal with a third communication signal according to a second multiplexing technique.

2. The method of claim 1, wherein multiplexing the first communication signal with the third communication signal precedes multiplexing the first communication signal with the second communication signal, whereby the multiplexed first communication signal and third communication signal are multiplexed with the second communication signal.

3. The method of claim 1, wherein the second multiplexing technique comprises at least a first multiplexing operation and a second multiplexing operation, wherein the first multiplexing operation has been performed on the second and third communication signals, and wherein multiplexing the second communication signal with the third communication signal comprises performing the second multiplexing operation.

4. The method of claim 1, wherein the first multiplexing technique comprises at least a first multiplexing operation and a second multiplexing operation, wherein the second multiplexing technique comprises at least a first multiplexing

operation and a second multiplexing operation, and wherein the first and second multiplexing operations of the first multiplexing technique are interspersed with the first and second multiplexing operations of the second multiplexing technique.

5. The method of claim 1, wherein the first multiplexing technique comprises:

puncturing the first communication signal at a plurality of time positions; and

inserting portions of the second communication signal into the punctured positions.

6. The method of claim 5, wherein puncturing comprises puncturing at a puncturing ratio selected from the group consisting of: a fixed puncturing ratio and a variable puncturing ratio.

7. The method of claim 5, wherein inserting comprises:

inserting the portions of the second communication signal into a subset of the punctured positions; and

inserting portions of the third communication signal into unused punctured positions into which no portions of the second communication signal have been inserted.

8. The method of claim 5, further comprising:

puncturing the third communication signal at the plurality of time positions.

9. The method of claim 1, wherein the first communication signal is associated with a data channel, and wherein the second communication signal is associated with a pilot channel configured to carry pilot information for use in coherent detection of the data channel.

10. The method of claim 9, wherein the pilot information comprises predetermined information.

11. The method of claim 9, wherein the pilot information comprises channel configuration parameters of the data channel.

12. The method of claim 11, wherein the channel parameters comprise at least one parameter selected from the group consisting of: data rate and modulation type.

13. The method of claim 1, wherein the first, second, and third communication signals comprise CDM (code division multiplexing) signals, and wherein the first multiplexing technique comprises TDM (time division multiplexing).

14. The method of claim 13, wherein the first and second communication signals comprise respective information that has been spread onto Walsh codes in a common Walsh code branch.

15. The method of claim 1, further comprising:

determining a power level of the third communication signal; and

allocating a power level to the first communication signal and the second communication signal based on the power level of the third communication signal.

16. A computer-readable medium storing instructions which when executed by a processor perform the method of claim 1.

17. The method of claim 1, further comprising:

transmitting to a receiver a multiplexed signal comprising the first communication signal multiplexed with the second communication signal according to the first multiplexing technique and with the third communication signal according to the second multiplexing technique;

receiving the multiplexed signal at the receiver; and

demultiplexing the received multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal.

18. A method comprising:

receiving a multiplexed signal comprising a first communication signal multiplexed with a second communication signal according to a first multiplexing technique and with a third communication signal according to a second multiplexing technique; and

demultiplexing the multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal.

19. The method of claim 18, wherein the second communication signal comprises encoded control information associated with the first communication signal, further comprising:

decoding the encoded control information.

20. The method of claim 19, wherein the control information comprises pilot information for coherent detection of the first communication signal.

21. The method of claim 20, wherein the pilot information comprises known predetermined information.

22. The method of claim 20, wherein the pilot information comprises information associated with a pilot channel.

23. The method of claim 20, wherein the first, second, and third communication signals are associated with respective reverse link communication channels between a communication terminal and a network element in a communication network.

24. The method of claim 23, wherein the first communication signal is associated with an R-ESCH (Reverse Enhanced Supplemental Channel).

25. The method of claim 24, wherein the second communication signal is associated with an R-RICH (Reverse Rate Indicator Channel).

26. The method of claim 24, wherein the second communication signal is associated with an R-PDPICH (Reverse Packet Data Pilot Channel).

27. A computer-readable medium storing instructions which when executed by a processor perform the method of claim 18.

28. A system comprising:

an input for receiving first, second, and third communication signals; and

a processor configured to multiplex the first communication signal with the second communication signal

according to a first multiplexing technique and to multiplex the first communication signal with the third communication signal according to a second multiplexing technique.

29. The system of claim 28, wherein the first, second, and third communication signals are CDM (code division multiplexing) signals, wherein the first multiplexing technique is TDM (time division multiplexing), and wherein the second multiplexing technique is CDM.

30. The system of claim 29, wherein the processor implements a puncturer configured to puncture the first communication signal at a plurality of time positions and a multiplexer configured to insert portions of the second communication signal into the punctured positions.

31. The system of claim 30, wherein the processor further implements an encoder configured to encode the portions of the second communication signal, and wherein the multiplexer is further configured to insert the encoded portions of the second communication signal into the punctured positions.

32. The system of claim 31, wherein the first communication signal comprises information encoded using a Walsh coding branch, and wherein the encoder is configured to encode the portions of the second communication signal using the Walsh coding branch.

33. The system of claim 28, wherein the processor implements a power controller configured to determine a power level of the third communication signal, and to control a power level of the first communication signal and the second communication signal based on the power level of the third communication signal.

34. The system of claim 28, implemented in a communication terminal in a communication network, the communication network further comprising a network element, wherein the processor is further configured to transmit to the network element a multiplexed signal comprising the first communication signal multiplexed with the second communication signal according to the first multiplexing technique and with the third communication signal according to the second multiplexing technique, and wherein the network element comprises:

an input for receiving the multiplexed signal; and

a processor configured to demultiplex the received multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal,

whereby multiplexing of signals according to the first and second multiplexing techniques is supported for reverse link communications between the communication terminal and the network element.

35. The system of claim 28, implemented in a network element of a communication network, the communication network

further comprising at least one communication terminal, wherein the processor is further configured to transmit to the communication terminal a multiplexed signal comprising the first communication signal multiplexed with the second communication signal according to the first multiplexing technique and with the third communication signal according to the second multiplexing technique, and wherein the communication terminal comprises:

an input for receiving the multiplexed signal; and

a processor configured to demultiplex the received multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal,

whereby multiplexing of signals according to the first and second multiplexing techniques is supported for forward link communications between the network element and the communication terminal.

36. The system of claim 28, implemented in both a communication terminal and a network element in a communication network, wherein:

the processors in the communication terminal and the network element are further configured to transmit to the network element and the communication terminal, respectively, a multiplexed signal comprising the first communication signal multiplexed with the second communication signal according to the first multiplexing technique and with the third communication signal according to the second multiplexing technique;

the inputs in the communication terminal and the network element are further configured to receive the multiplexed signal from the network element and the communication terminal, respectively, and

a processors in the communication terminal and the network element are further configured to demultiplex the received multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal,

whereby multiplexing of signals according to the first and second multiplexing techniques is supported for both reverse link communications between the communication terminal and the network element and forward link communications between the network element and the communication terminal.

37. A system comprising:

an input for receiving a multiplexed signal comprising a first communication signal multiplexed with a second communication signal according to a first multiplexing technique and with a third communication signal according to a second multiplexing technique; and

a processor configured to demultiplex the multiplexed signal according to a demultiplexing technique corresponding to the first multiplexing technique to recover the second communication signal.

38. The system of claim 37, wherein the second communication signal comprises encoded control information associated with the first communication signal, and wherein the

processor is further configured to decode the encoded control information and to further process the multiplexed signal using the control information.

39. The system of claim 38, wherein the control information comprises information indicating a data rate of the first communication signal.

40. A communication channel structure comprising:

a first communication channel having punctured positions forming a punctured communication channel multiplexed with the first communication channel according to a first multiplexing technique;

a second communication channel; and

a third communication channel,

wherein information from the second communication channel is inserted into the punctured communication channel, and wherein the first and third communication channels are adapted for multiplexing according to a second multiplexing technique.

41. The structure of claim 40, wherein the first, second, and third communication channels are CDM (code division multiplexing) channels, wherein the first multiplexing technique is TDM (time division multiplexing), and wherein the second multiplexing technique is CDM.

42. The structure of claim 40, wherein the third communication channel comprises punctured positions corresponding to the punctured positions of the first communication signal, and wherein the third communication channel assumes a DTX (discontinued transmission) state at the punctured positions.

43. The structure of claim 41, wherein the first, second, and third communication channels comprise reverse link communication channels between a communication terminal and a communication network element in a communication system.

44. The structure of claim 43, wherein the first communication channel comprises an R-ESCH (Reverse Enhanced Supplementary Channel).

45. The structure of claim 44, wherein the second communication channel is selected from the group consisting of: an R-RICH (Reverse Rate Indicator Channel) and an R-PDPICH (Reverse Packet Data Pilot Channel).

46. The structure of claim 44, wherein the R-ESCH is a variable frame size channel having a plurality of frames, each frame comprising a plurality of time slots, wherein the punctured positions comprise at least one punctured position per time slot.

47. The structure of claim 46, wherein the information from the second communication channel comprises a coded symbol, and wherein the coded symbol is inserted into a plurality of punctured positions in adjacent time slots of the first communication signal.

48. The structure of claim 47, wherein the coded symbol inserted into the punctured positions of a frame of the R-ESCH encode a data rate of a next frame of the R-ESCH.

49. The structure of claim 48, wherein the coded symbol encodes 4 information bits which indicate one of 16 different MCS (Modulation Coding Set)/data rates.

50. The structure of claim 47, wherein the coded symbol is repeated in the punctured positions.